```sql
--1. How many customers do we have in the data?

SELECT COUNT(customer_name) AS num_customers
FROM customers;
```

```
Resulted output:
num_customers
795
```

```
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```

```sql
--2. What was the city with the most profit for the company in 2015?

SELECT o.shipping_city,
       SUM(od.order_profits) AS sum_profits
FROM   orders o
       LEFT JOIN order_details od
              ON o.order_id = od.order_id
WHERE  DATE_PART('year', o.order_date) = 2015
GROUP  BY o.shipping_city
ORDER  BY sum_profits DESC
LIMIT  1;
```

```
Resulted output:
shipping_city             sum_profits
New York City              14753
```

```
**********
```

```sql
--3. In 2015, what was the most profitable city's profit?

SELECT o.shipping_city,
       SUM(od.order_profits) AS sum_profits
FROM   orders o
       LEFT JOIN order_details od
              ON o.order_id = od.order_id
WHERE  DATE_PART('year', o.order_date) = 2015
GROUP  BY o.shipping_city
ORDER  BY sum_profits DESC
LIMIT  1;
```

```
Resulted output:
```

```
shipping_city             sum_profits
New York City              14753


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--4. How many different cities do we have in the data?

SELECT COUNT(DISTINCT shipping_city) AS count_cities
FROM   orders;

count_cities
531

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--5. Show the total spent by customers from low to high.

SELECT c.customer_id,
       c.customer_name,
       SUM(order_sales) AS total_sales
FROM   orders o
       LEFT JOIN order_details od
              ON o.order_id = od.order_id
       INNER JOIN customers c
               ON o.customer_id = c.customer_id
GROUP  BY c.customer_id,
          c.customer_name
ORDER  BY total_sales;


Resulted output:
793 ROWS
.................
.................


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--6. What is the most profitable city in the State of Tennessee?
SELECT o.shipping_city,
       o.shipping_state,
       SUM(od.order_profits) AS sum_profits
FROM   orders o
       LEFT JOIN order_details od
              ON o.order_id = od.order_id
```

```
WHERE  o.shipping_state = 'Tennessee'
GROUP  BY o.shipping_city,
          o.shipping_state
ORDER  BY sum_profits DESC
LIMIT  1;


Resulted output:

shipping_city   shipping_state     sum_profits
Lebanon          Tennessee           83


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--7. What's the average annual profit for that city across all years?


WITH avg
     AS (SELECT o.shipping_city,
                o.shipping_state,
                o.order_date,
                SUM(od.order_profits) AS sum_profits
         FROM   orders o
                LEFT JOIN order_details od
                       ON o.order_id = od.order_id
         WHERE  o.shipping_state = 'Tennessee'
                AND o.shipping_city = 'Lebanon'
         GROUP  BY o.shipping_city,
                   o.shipping_state,
                   o.order_date)
SELECT AVG(sum_profits) AS average_profit
FROM   avg;

Resulted output:
average_profit
27.67

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--8. What is the distribution of customer types in the data?

SELECT customer_segment,
       COUNT(customer_segment) AS cnt
FROM   customers
GROUP  BY customer_segment;
```

```
Resulted output:
customer_segment      cnt
Consumer              410
Corporate             237
Home Office           148

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```

```sql
--9. What's the most profitable product category on average in Iowa across all
years?

SELECT p.product_category,
       SUM(order_profits) AS total_profits
FROM   orders o
       LEFT JOIN order_details od
              ON o.order_id = od.order_id
       INNER JOIN product p
               ON od.product_id = p.product_id
WHERE  shipping_state = 'Iowa'
GROUP  BY p.product_category
ORDER  BY total_profits DESC
LIMIT 1;
```

```
Resulted output:
product_category     total_profits
Furniture             521

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```

```sql
--10. What is the most popular product in that category across all states in
2016?


SELECT p.product_name,
       COUNT(product_name) AS product_cnt
FROM   orders o
       LEFT JOIN order_details od
              ON o.order_id = od.order_id
       INNER JOIN product p
               ON od.product_id = p.product_id
WHERE  DATE_PART('year', o.order_date) = 2016
       AND p.product_category = 'Furniture'
GROUP  BY p.product_name
ORDER  BY product_cnt DESC;
```

```
Resulted output:
270 rows
product_name                                                    product_cnt
Bretford CR4500 Series Slim Rectangular Table                        4
Hon 4070 Series Pagoda Armless Upholstered Stacking Chairs           4
Global Armless Task Chair, Royal Blue                                4
Executive Impressions 14" Two-Color Numerals Wall Clock              4
......


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```

```sql
--11. Which customer got the most discount in the data? (in total amount)

SELECT o.customer_id,
       SUM(od.order_discount * od.order_sales) AS total_discount
FROM   orders o
       LEFT JOIN order_details od
              ON o.order_id = od.order_id
GROUP  BY o.customer_id
ORDER  BY total_discount DESC;
```

```
Resulted output:
793 rows
customer_id   total_discount
687    11988.9
308    4465.2
157    4078.4
76     4064.4
388    3779.4
..........


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```

```sql
--12. How widely did monthly profits vary in 2018?

SELECT *,
       month_total - Lag(month_total, 1, 0)
                       OVER (
                         ORDER BY month_year) AS month_diff
FROM   (SELECT To_CHAR(order_date, 'MM-YYYY') AS month_year,
               SUM(od.order_profits)          AS month_total
        FROM   orders o
               JOIN order_details od
                 ON o.order_id = od.order_id
```

```
        WHERE  DATE_PART('year', order_date) = 2018
        GROUP  BY month_year) month_total;

Resulted output:

month_year    month_total   month_diff
01-2018       7137           7137
02-2018       1612           -5525
03-2018       14758          13146
04-2018       934           -13824
05-2018       6342          5408
06-2018       8226          1884
07-2018       6951         -1275
08-2018       9034          2083
09-2018       10987         1953
10-2018       9272          -1715
11-2018       9217          -55
12-2018       8473          -744

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--13. Which order was the highest in 2015?

SELECT od.order_id,
       MAX(od.order_sales) AS max_order
FROM   orders o
       JOIN order_details od
         ON o.order_id = od.order_id
WHERE  DATE_PART('year', o.order_date) = 2015
GROUP  BY od.order_id
ORDER  BY max_order DESC
LIMIT  1;

Resulted output:
order_id           max_order
CA-2015-145317       22638

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--14. What was the rank of each city in the East region in 2015?


SELECT o.shipping_city,
       SUM(od.quantity),
       RANK()
         OVER (
           ORDER BY SUM(od.quantity) DESC) AS rank
```

```
FROM   orders o
       JOIN order_details od
         ON o.order_id = od.order_id
WHERE  o.shipping_region = 'East'
       AND DATE_PART('year', o.order_date) = 2015
GROUP  BY o.shipping_city;


Resulted output:
shipping_city sum    rank
New York City 1708   1
Philadelphia  403    2
Columbus      167    3
Newark        64     4
Fairfield     53     5


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--15. Display customer names for customers who are in the segment 'Consumer'
or 'Corporate.' How many customers are there in total?

SELECT COUNT(customer_id) AS cnt
FROM (
SELECT customer_segment,customer_id
FROM customers
WHERE customer_segment='Consumer' OR customer_segment='Corporate') sub;

Resulted output:
cnt
647


code 2:
WITH cust_filter AS
(
SELECT customer_segment,customer_id
FROM customers
WHERE customer_segment IN ('Consumer' ,'Corporate')
)
SELECT COUNT(cf.customer_id) AS cnt
FROM cust_filter cf;

Resulted output:
cnt
647
```

```
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--16. Calculate the difference between the largest and smallest order
quantities for product id '100.'

SELECT product_id,
       MAX(quantity) AS largest_quantity,
       MIN(quantity) AS smallest_quantity
FROM   order_details
WHERE  product_id = 100
GROUP  BY product_id


Resulted_output:
product_id    largest_quantity     smallest_quantity
100                 6                 2

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--17. Calculate the percent of products that have 'Furniture' as their
category.

SELECT COUNT(*) * 100.0 / (SELECT COUNT(*) FROM product) AS percentage
FROM product
WHERE product_category = 'Furniture';

Resulted output:
percentage
20.54054054

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--18. Display the number of duplicate products based on their product
manufacturer.
--Example: A product with an identical product manufacturer can be considered
a duplicate.

SELECT product_manufacturer, COUNT(*) AS num_duplicates
FROM product
GROUP BY product_manufacturer
HAVING COUNT(*) > 1;

Resulted output:

product_manufacturer  num_duplicates
Linden                  2
```

```
Iceberg                 3
SanDisk                 8
Memorex                 13
Bulldog                 2
.........
```

****

```
--19. Show the product_subcategory and the total number of products in the
subcategory.
--Show the order from most to least products and then by product_subcategory
name ascending.

SELECT product_subcategory,
       COUNT(*) AS total_products
FROM   product
GROUP  BY product_subcategory
ORDER  BY total_products DESC,
          product_subcategory ASC;
```

Resulted output:

```
product_subcategory  total_products
Paper                277
Binders              211
Phones               189
Furnishings          186
Art                  157
Accessories          147
Storage              132
Appliances           97
Chairs               88
Labels               70
Machines             63
Tables               56
Bookcases            50
Envelopes            44
Supplies             36
Fasteners            34
Copiers              13
```

****

```sql
--20. Show the product_id(s), the sum of quantities, where the total sum of
its product quantities is greater than or equal to 100.


SELECT product_id, quantity
FROM order_details
WHERE quantity >= 100
ORDER BY product_id;


Resulted output:
product_id    quantity
122             143
920             130
1507            324
1600            216


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```